THE JOURNAL

OF

POLITICAL ECONOMY

JUNE — 1902

FREIGHT-RATES ON ARGENTINE AND NORTH AMERICAN WHEAT.

THE source of the supply of foreign wheat consumed by western Europe has undergone a considerable change in the last decade. The development of the sixties of the nineteenth century was characterized by the first appearance of large masses of transoceanic wheat, coming from the United States, and that of the seventies and eighties by the advent of British India in the world's wheat market as a competitor of the United States and Russia, which, however, were steadily increasing in importance as exporters. The most striking feature of the nineties was the sudden and enormous influx of Argentine wheat and the decrease in the imports of Indian wheat, as a consequence of which the United States and Argentina are today the main factors in the transoceanic wheat supply of western Europe. The last few years have further shown that the South American Republic with which the United States and Russia have now to compete is a much more formidable adversary than was ever their Asiatic competitor. In no year did the exports from British India reach or even closely approach those from Russia or the United States, though the exports of wheat from Argentina were in 1899 and in

1900 about as large as those from Russia. And while up to the present time the exports from the United States have regularly exceeded and generally very considerably exceeded those from Argentina, there is more than a possibility that this state of affairs may be reversed. Among all the factors which will determine the course of this development perhaps the most important will be the cost of transportation of the wheat from the Argentine and the United States farms to western Europe. This fact is more or less recognized by all students of the question, but as yet there does not exist any satisfactory comparative study of the freight rates and commercial charges on Argentine and North American wheat. The aim of the following study is to discuss that part of the costs of transportation, which is involved in the transportation proper, and to compare the freight charges on wheat from the Argentine farm and from that in the United States to the local railway station, from there to the ocean and thence to the European market. But in order better to appreciate the amount of traffic involved it will be well perhaps first to consider the total output and the exports of wheat for both countries.

The share which the Argentine Republic had in the world's wheat production in the last decade may be seen from the following table which gives for the last two quinquennial periods the average yearly crop of all the countries having an average annual output of more than fifty million bushels.

With 2.27 per cent., or one forty-fourth of the world's wheat production, Argentina kept in the last decade the eleventh position among the wheat producing countries. In the quinquennial period 1891 to 1895 it occupied the twelfth rank, but went in the period 1896 to 1900 to the tenth, its wheat crop surpassing that of Roumania and Great Britain. In the average of the two years 1899 and 1900 it even occupied the eighth rank, being ahead of Asiatic Russia and Spain.

But a consideration of the production alone cannot give an adequate idea of the importance of Argentina in the world's wheat market. On account of its small population, which in fact

Countries.	Average Annual Crop in 1,000 Bushels.			Percentage.
	1891–95.[1]	1896–1900.[2]	1891–1900.	1891–1900.
United States	490,246	540,503	515,375	20.00
European Russia	369,632	370,043	369,838	14.35
France	299,563	324,737	312,150	12.12
British India	247,982	215,186	231,584	8.99
Hungary	148,017	127,701	137,859	5.35
Italy	126,427	125,432	125,930	4.89
Germany	107,846	132,126	119,986	4.66
Spain	87,144	98,942	93,043	3.61
Asiatic Russia	77,332	85,885	81,608	3.17
Great Britain	56,999	62,755	59,877	2.32
Argentina	53,000	63,939	58,469	2.27
Roumania	57,053	49, 25	53,389	2.07
Canada	51,406	53,913	52,660	2.04
All other countries	372,787	356,729	364,757	14.16
Total	2,545,434	2,607,616	2,576,525	100.00

is less numerous than that of any of the other twelve countries for which the production is given in the above table, it has a smaller need of wheat for home consumption than any of the other countries. According to the estimates made by the Argentine Department of Agriculture[3] for the years 1890–91 to 1898–9, only about 31 per cent. of the wheat crop was consumed within the country, and 9 per cent. was used for seed, while in the United States not more than one-third of the total crop of the same years was available for export.[4] As a consequence of this fact, the present export of wheat from Argentina, as indicated before, is only exceeded by that of the United States and Russia. In the eighties the combined exports of wheat and wheat flour from Argentina were still surpassed by those from Austria-Hungary, Roumania, Canada, and British India. But

[1] *Cf. Yearbook of the United States Department of Agriculture*, 1895, p. 530; 1897, pp. 717 f.; 1898. pp. 686 f.; 1899, pp. 776 f.

[2] *Cf. idem*, 1900, pp. 763 f. and *Annual Statistical Report of the New York Produce Exchange for the year 1900* (prepared by I. C. Brown), pp. 45 f. (From *Reports of the U. S. Dept. of Agriculture*, revised April, 1901).

[3] *Bóletin de Agricultura y Ganaderia*, Año I, Núm. 12, July 1, 1901, p. 41.

[4] *Cf. Yearbook of the United States Department of Agriculture*, 1900, p. 168, and *Statistical Abstract of the United States*, 1901, p. 333.

Years.	Wheat in 1,000 Bushels.			Wheat Flour in 1,000 Barrels.		
	United States.[1]	Russia.[2]	Argentina.[3]	United States.[1]	Russia.[2]	Argentina.[3]
1876	55,073	55,641	1	3,936	751	4
1877	40,326	52,139	7	3,344	460	2
1878	72,405	103,949	94	3,947	993	34
1879	122,354	83,801	94	5,630	684	17
1880	153,253	36,972	43	6,011	437	16
1881	150,565	49,511	6	7,946	450	14
1882	95,272	77,242	63	5,916	830	6
1883	106,386	84,985	2,232	9,206	268	54
1884	70,349	68,902	3,987	9,152	609	42
1885	84,654	93,326	2,884	10,648	863	84
1886	57,759	55,078	1,391	8,179	679	59
1887	101,972	81,402	8,740	11,518	727	57
1888	65,789	129,237	6,574	11,964	768	72
1889	46,414	114,682	838	9,375	697	38
1890	54,388	109,590	12,048	12,232	685	135
1891	55,132	106,150	14,534	11,344	689	79
1892	157,280	49,086	17,273	15,197	475	212
1893	117,121	94,029	37,043	16,620	588	427
1894	88,415	123,224	59,093	16,860	694	458
1895	76,103	142,678	37,121	15,269	772	607
1896	60,650	132,161	19,547	14,621	697	582
1897	79,562	128,385	3,742	14,570	694	466
1898	148,231	106,860	23,705	15,350	832	359
1899	139,433	64,466	62,904	18,486	707	669
1900	101,950	70,264	70,903	18,699	671	576
1901	132,061	83.293	33.227	18,651	679	807

[1] For the years 1876 to 1899 *cf. Bureau of Statistics, Monthly Summary of Commerce and Finance of the United States*, January, 1900, p. 2022; for 1900 and 1901, *idem*, June, 1901, pp. 3142 f. The figures refer to fiscal years, ending June 30, 1876, etc.

[2] The figures for wheat for the years 1876 to 1896 are calculated from *Étude statistique sur le commerce extérieur de la Russie, par B. Pokrowsky*, chef de la section de statistique du Département des Douanes (St. Petersburg, 1900), p. 7; for flour, from *Das Getreide im Weltverkehr*, Vol. I, p. 196; all figures for 1897 to 1899 from *Statistical Abstract for the principal and other Foreign Countries*, 27th number, pp. 74 f.; for 1900 and 1901, from Imperial Russian Ministry of Finances, Division of Customs, *Foreign Trade over the European Frontier*, St. Petersburg, 1902 (Russian), p. 8. The figures for 1900 and 1901, include only the exports over the European frontier. The bushel of wheat is counted equal to 60 pounds, the barrel of flour equal to 196 pounds. All figures refer to calendar years.

[3] For 1876 to 1897 calculated from *Anuario de la Dirección general de estadística correspondiente al año 1897*, Tomo I, pp. 310 f.; for 1898, *ibid.*, 1898, Tomo I, pp. 322 f.; for 1899 *ibid.*, 1899, Tomo I, pp. 213, 215; for 1900, *ibid.*, 1900, Tomo I, pp. 217, 220; for 1901 from Dirección general de estadística de la nación. *El comercio exterior Argentino*, año 1901, Núm. 112, p. 96. The bushel of wheat is counted equal to 60 pounds, the barrel of flour equal to 196 pounds. The figures refer to calendar years.

the Argentine exports surpassed those of Canada since 1890, those of Austria-Hungary in every year since 1891, those of Roumania and British India generally since 1893.[1] The total amount of domestic wheat and wheat flour exported in the last quarter of a century from the three now leading countries in the world's wheat market will be seen from the table on opposite page.

The average annual export of domestic wheat in the last decade (1891 to 1900) from the United States and Russia amounted to 102,000,000 bushels each, and from Argentina to 35,000,000 bushels; the average annual export of domestic wheat flour from the United States to 15,700,000 barrels, from Russia to 682,000, from Argentina to 444,000. If one barrel of flour is considered equal to 4½ bushels of wheat, the combined exports of wheat and wheat flour from the United States amounted to about 173,000,000 bushels, from Russia to about 105,000,000, from Argentina to about 37,000,000 bushels.

The differences in the average price of the wheat imported from these three countries to England in the last five years will be seen from the following table:[2]

With the exception of the year 1898, when the price for Argentine wheat in the English market was higher than the average price for the wheat coming from the United States and Russia, the Argentine wheat cost in every year less than the average of all imported wheat, and less than that from the United States and Russia.

As almost all the export wheat of the United States and most of that grown in Argentina is hauled from the farms to the railroad, very little being carried directly to a shipping point, a short glance may first be taken at the development of the railways in both countries.

[1] *Cf.* for details, *Das Getreide im Weltverkehr.* Vom kk. Ackerbauministerium vorbereitete Materialień für die Enquête über den börsenmässigen Terminhandel mit landwirtschaftlichen Produkten, Vol. I, *Statistische Tabellen über Produktion. Handel, Consum. Preise, Frachtsätze und Kündigungen* (Vienna, 1900).

[2] Calculated from *Böletín de Agricultura y Ganadería, Año I, núm. 14* (August 1, 1901), p. 61.

Countries From Which Imported.	Average Price of the Bushel of Wheat[1] in Cents.				
	1896.	1897.	1898.	1899.	1900.
Argentina	76.3	89.0	114.1	83.1	85.7
United States (Atlantic Ports)	82.6	100.4	105.2	89.2	90.5
United States (Pacific Ports)	82.1	94.3	106.2	86.9	88.5
Russia (Northern Ports)	83.9	95.8	111.5	89.5	88.7
Russia (Southern Ports)	77.8	93.5	100.9	86.7	88.7
Average of all countries[2]	80.6	97.2	104.4	87.2	88.7

The first railway line in Argentina was opened on August 30, 1857, with a total length of 6 miles, nearly thirty years after the opening of the first road in the United States, which by 1857 had nearly 25,000 miles in operation. By the end of 1870, 455 miles were in operation in Argentina against 116 times that length in the United States, which had 52,922 miles. By the end of 1880, Argentina counted 1,563 miles, the United States 93,262, or 60 times as much; by the end of 1890, Argentina had 5,861 miles against 166,703, or 28 times as much, in the United States; by the end of 1900, Argentina had 10,292 miles, the United States 19 times as much, or exactly 194,321 miles.[3] The traffic and the density of the railways in recent years in Argentina and in the United States will be seen from the following table :

While the number of miles of railway compared with the population is not much larger in the United States than in

[1] The original figures are given in English currency for imperial quarters = 218 kg. = 8 bushels (of 60 pounds.) The basis for the transactions of wheat in Buenos Aires is the hectoliter, 1 hl. being supposed to weigh 77 kg. (1 bushel = 59.8 pounds). In fact, the Argentine wheat seems to be somewhat heavier than this, the average hectoliter of wheat in the province of Santa Fé having been found to weigh 78.11 kg. (1 bushel = 60.7 pounds), in the province of Entre Rios, 79.98 kg. (1 bushel = 62.2 pounds). *Cf. Ministère des Affaires Étrangères, Missions Commerciales; La République Argentine*, Charles Wiener (Paris, 1899), p. 53. In another place in his report, however (p. 344), Wiener gives for the weight of the hectoliter of wheat in Entre Rios as low an average as 68.04 kg.

[2] Including those not mentioned.

[3] Calculated for Argentina from *Ministério de Obras Públicas; Dirección de Vías de Comunicación, Estadística de los Ferrocarriles en Explotación*, Año 1900, p. 255; *cf.* for the United States, *Statistical Abstract of the United States*, 1901, p. 390.

Items.	Argentina.[1]			United States.[2]		
	1895.	1897.	1899.	1895–96.	1897–98.	1899–1900.
Passengers carried (in thousands)	14,753	16,411	18,015	511,773	501,067	576,865
Passengers carried 1 mile (in millions)	370	396	441	13,049	13,380	16,039
Passengers carried 1 mile per mile of line	42,180	43,703	43,852	71,705	72,462	83,295
Tons (2,000 lbs.) carried (in thousands)	10,638	19,900	13,029	765,891	879,006	1,101,680
Tons carried 1 mile (in millions)	950	1,141	1,421	95,328	114,078	141,599
Tons carried 1 mile per mile of line	108,215	114,913	141,369	523,832	617,810	735,366
Miles of railway per 100 square miles	0.79	0.82	0.92	6.15	6.28	6.51
Miles of railway per 10,000 inhabitants	21–22	21–22	21–22	25.8	25.4	25.4

Argentina, the number of passengers carried one mile per mile of line is from 70 to 90 per cent. higher in the United States than in the former country. The number of tons carried one mile per mile of line in the United States is even five times as large as in the South American republic. The density of the railways, measured by comparison of the length of mileage with the total area, is only one-seventh in Argentina of what it is in the United States. But while it is true that for Argentina, considered as a whole, the mileage of railways is exceedingly small in comparison with the area, this does not apply to the wheat districts. In fact, as will be seen from the following table, the four principal wheat producing provinces, with an area of 21.23

Provinces.	Mileage.[3]	Miles of Railway per 100 square miles.
Buenos Aires	3286	2.79
Santa Fé	2115	4.15
Córdoba	1222	3.13
Entre Rios	457	1.59
Total of four provinces.	7080	2.99
All others	3119	0.36

[1] Calculated from *Estadística de los Ferrocarriles*, 1895, p. 24; 1897, pp. 22 f.; 1899, pp. 24–27, 217.

[2] *Interstate Commerce Commission, Thirteenth Annual Report for the year ending June 30, 1900*, pp. 13, 67.

[3] Calculated from *Estadística de los Ferrocarriles*, 1899, p. 8.

per cent. of the total area of the republic,[1] contained in 1899 69.41 per cent. of the total railway mileage.

In the central wheat region of the province of Santa Fé, which contains about one-half of the wheat acreage of the whole country, the number of miles of railway per 100 square miles of area was as high as eight.[2]

The number of miles of lines per 100 square miles of territory in the United States on June 30, 1900, was 6.51. With regard to the principal wheat producing states the following classes may be formed: Oregon (1.82), Oklahoma (2.13), California (3.69), South Dakota (3.71), Texas (3.77), North Dakota (3.89), Washington (4.36), Colorado (4.43); Nebraska (7.40), Minnesota (8.77), Virginia (9.42), Missouri (10.00), Kansas (10.67), Wisconsin (11.99); Maryland (13.96), Michigan (14.27), Iowa (16.56), Indiana (18.02), Illinois (19.65).[3]

The density of the railways in the principal wheat producing provinces of Argentina is then only as high as that of the western wheat states of the union, while in the central wheat district of the South American republic it is as intense as in some of the middle states.

The density of the railways, however, is only one factor determining the distance which the farmer has to haul his wheat by animal power. A second factor is the density of stations, where the grain is loaded on trains, or the distance of the elevators from each other, in case it is first stored. The total length of the railway mileage in Argentina at the end of the year 1899 was 10,199 miles; the total number of stations was 1028;[4] the average number of miles per station was then nearly 10 miles. The maximum distance between two stations in Argentina was 43½ miles.[5] Thirteen of the twenty-four roads in Argentina in 1899 carried each more than 30,000 net tons of grain (wheat,

[1] *Cf.* this JOURNAL, March, 1902, p. 268.

[2] *Cf.* KARL KAERGER, *Landwirtschaft und Kolonisation im Spanischen Amerika* (Leipzig, 1901), Vol. I, p. 184, and this JOURNAL, March, 1902, p. 274.

[3] *Cf. Interstate Commerce Commission, Thirteenth Annual Report*, p. 12.

[4] *Estadística de los Ferrocarriles*, 1899, pp. 104 f. [5] Calculated from *ibid.*

corn and barley) and together 98.6 per cent. of the total grain transported; these thirteen railways, with a total length of 7,328 miles, had 807 stations, or one station for about each 9 miles. The average number of miles to a station on these thirteen roads varied between 7.5 miles and 12.8 miles. The maximum distance between two stations was 33 miles. The same result finally is arrived at if the investigation is restricted to those three lines which carried each more than 500,000 tons of grain in 1899, and together about 55 per cent. of the total grain freight, viz., the Sud de Buenos Aires, the Oeste de Buenos Aires, and the Central Argentino. With a total length of 3,708 miles, they had 394 stations, or again, one station to about each 9 miles (see table on p. 347, columns 1 to 4).

The author is not aware of any publication giving similarly comprehensive data for the railways of the United States. Moreover, no information is available as to the comparative regularity in the distribution of the railways and the stations in the wheat territory of both countries, and none as to the comparative directness of the roads from the farms to the stations or elevators. In order to get a conception of the average distance which the farmer has to haul his wheat by animal power, recourse must then be had to the various calculations and estimates which have been made for both countries.

In a report on "Transportation of Wheat in the Province of Santa Fé," written in September, 1895, Willis E. Baker, United States consul in Rosario, assumes that the average distance from the farm to the railway station is 3 leagues[1] (9.7 miles)[2]. In a similar way Alejandro Grant, manager of the Buenos Aires Central Market, in a letter of September, 1895, to Mr. Baker, on "Cost of Wheat Transportation," counts 3 leagues as the haul in the southern portion of the province of Buenos Aires,[3] while a land company of Buenos Aires recently (May, 1901), gave 2

[1] *Consular Reports, Commerce, Manufactures*, etc., Vol. XLIX, No. 183, December, 1895, p. 475. The same average is given in a report of the Argentine Department of Agriculture (*Memórias de las Direcciones de Comércio é Industrias, Tierras y Colonias, Agricultura y Ganadería é Inmigracion*, Buenos Aires, 1899, p. 135.

[2] 1 league = 3.22864 miles.

[3] *Consular Reports, loc. cit.*, p. 469.

to 3 leagues (6.5 to 9.7 miles) as the distance from its farms in the same district.[1] In his excellent studies on agriculture and colonization in Spanish America, Karl Kaerger, after a very careful examination of the subject, reaches the conclusion that, in the central wheat region of Santa Fé, the farmer has to haul his wheat on an average 7.3 miles, and in the main wheat region of Córdoba, 13.5 miles.[2] Eight or nine miles may then be taken as the average distance from the Argentine wheat farm to the nearest railway station.

In 1893 the government of the United States, in accordance with a law passed by Congress in March of that year, appointed Mr. Roy Stone as a special agent to gather information as to the traffic of the country roads in the United States.[3] After two years of investigation, returns from about 1200 counties were compiled, and "the result shows that the average length of haul in the eastern states is 5.9 miles; in the northern states 6.9 miles; in the middle states 8.8 miles; in the cotton states 12.6 miles; in the prairie states 8.8 miles; in the Pacific coast and mountain states 23.3 miles; and in the whole United States 12.1 miles."[4] Since this first investigation of the department of agriculture the question has been taken up in various states. Thus an investigation made in 1897 by the Bureau of Labor Statistics of Wisconsin, and covering 1,510 reports of farmers, showed the average haul to be about 6¾ miles;[5] while an investigation made by the Geological Survey of Maryland, and giving

[1] *Review of the River Plate* (Buenos Aires, May 11, 1901) p. 29 (partly reprinted in this JOURNAL, March 1902, pp. 279 f.).

[2] KAERGER, *loc. cit.*, Vol. I, pp. 183–194.

[3] Address of Martin Dodge on "Better Roads and Larger Profits," in *Report of the Ohio Road Commission* (under Authority of House Joint Resolution No. 59, Seventieth General Assembly), p. 24.

[4] United States Department of Agriculture, office of Road Inquiry, *Circular No. 19* (*cf.* the criticism of this investigation by Ira O. Baker, "Fallacies in Good-Road Economies," *Engineering News*, Vol. XLIV, No. 20, November 15, 1900, pp. 322–25). The Ohio Road Commission in agreement with John M. Stahl had estimated the average haul over country highways to be eight miles (*cf. Report*, pp. 18, 25).

[5] *Eighth Biennial Report of the Bureau of Labor and Industrial Statistics, State of Wisconsin*, 1897–8, pp. 158, 194.

the average hauling distance for each county in Maryland, showed it to vary in the twenty-three counties from 3 miles (Caroline) to 13 miles (Prince George's and Montgomery), giving an average for the state of 6.7 miles.[1] Finally in his report to the Industrial Commission on the distribution of farm products, John Franklin Crowell says that "it has been shown after careful inquiry, that the average haul of the American farmer in getting his produce to market, or to the nearest shipping station, is 12 miles."[2] It thus seems that the average distance from the wheat farm in the United States to the nearest shipping point is probably not shorter than in Argentina.

As to the cost of hauling the wheat, Baker, in a consular report on "Transportation of Wheat in the Argentine Republic," states, without giving the distance for the haul, that "the cost of moving grain from the farms to the railway stations is a very inconsiderable item — not 75 cents (gold) per ton"[3] (about 65½ American cents for a net ton of 2,000 pounds, that is, 2 cents per bushel of wheat). He later on gives $0.70 (61 American cents per ton) as the average cost from the farm to the station.[4] With regard to the southern portion of the province

[1] ARTHUR NEWHALL JOHNSON, "The Present Condition of Maryland Highways," *Maryland Geological Survey*, Vol. III (Baltimore, 1899), p. 208.

[2] *Report to the Industrial Commission*, Vol. VI, p. 446. In discussing the methods of handling grain in California, T. C. Friedlaender makes the surprising statement that "the average haul will probably not exceed 3 miles" (*ibid.*, p. 96).

[3] *Consular Reports*, *loc. cit.*, p. 461.

[4] *Ibid.*, p. 469. In his report on "Transportation of Wheat in the Province of Santa Fé," Mr. Baker says: "When the roads are in ordinary condition, it is considered that the charge for cartage will be about $1, paper currency — say 35 cents gold — per ton per league. Assume that the average distance is 3 leagues from the station, and we have $1.05 gold for cartage." This would give 92 cents for the total haul per net ton. But as the average price of gold in 1894 was 357, in 1895 344, Baker evidently meant to put 3.50 paper pesos equal to 1 gold peso. If these values are substituted, the total haul per net ton would be only 75 cents (2¼ cents per bushel), the haul per ton per mile 7¾ cents. In agreement with Baker, who gives 3.15 paper pesos for the average haul of 3 leagues in Santa Fé, the Argentine Department of Agriculture in 1899 quotes $3 (*cf. loc. cit.*, p. 135). The value of the paper, however, had meanwhile increased considerably, and the estimate of the Department of Agriculture in 1899 means in fact in American equivalents $1.17 per ton for the whole distance (3½ cents per bushel) and 12 cents per ton per mile.

of Buenos Aires, Grant[1] says: "The cartage from the chacra to the railway station for a distance of about 3 leagues costs just now $2.80 paper money per ton. In summer, when the roads are in good condition, this charge is much less." As he states the rate of exchange to be 1 : 3.335 at the time when he wrote his letter (September, 1895), his statement shows the cost of hauling a net ton for the entire distance to have been 73½ cents (2⅕ cents per bushel) and 7.6 cents per ton per mile.[2] In discussing the average cost of hauling the wheat from the farm to the nearest shipping station in the provinces of Santa Fé and Buenos Aires, Kaerger finds an average expense of only from 45 to 60 cents per net ton (1⅓ to 1⅘ cents per bushel) and shows the cost per ton per mile to be only from about 6 to 8 cents in the former province.[3] Even in taking full account of the fact that with the increase of the value of the paper currency at the end of the nineties, the prices measured in gold have considerably increased, it seems safe to assume that the average cost of hauling a ton of wheat a mile in Argentina would not be far from 10 cents and that the average expense of hauling a ton of wheat from the farm to the nearest shipping station will probably be less than one dollar (3 cents per bushel).

In his investigation relating to the traffic of the country roads in the United States, Roy Stone came to the following results as to the average cost per ton of 2,000 pounds per mile:

[1] *Consular Reports*, *loc. cit.*, p. 475.

[2] In a letter of August 27, 1895, on "Wheat Trade and Transportation in the Argentine Republic," to Mr. Baker, Henry D. Woolfe (*ibid.*, p. 473) states: "From the best sources I learn that the expenses may be set at from 40 to 60 cents (paper) per 100 kilos." In an appended "*pro forma* invoice of a shipment of wheat, which exhibits the cost when the gold rate was at 270 premium," Woolfe gives (p. 475) as the cartage from a farm in the province of Santa Fé to railroad station 40 cents (paper) per 100 kg., or 95 cents per net ton (2⅝ cents per bushel). In a similar way the above mentioned land company of Buenos Aires, in its statement of May, 1901, estimated the cartage to rail from its farms in the southern portion of the province of Buenos Aires to be 40 cents (paper) per 100 kg. But the premium on gold had meanwhile decreased so considerably that this cost would be equivalent to $1.54 per net ton for the entire haul (4⅔ cents per bushel), and as the company assumes the distance to be from 2 to 3 leagues, 19 cents per ton per mile.

[3] *Cf.* KAERGER, *loc. cit.*, Vol. I, pp. 210, 545.

in the eastern states 32 cents; northern states, 27 cents; middle southern states, 31 cents; cotton states, 25 cents; prairie states, 22 cents; Pacific coast and mountain states, 22 cents; and the whole United States, 25 cents.[1] Martin Dodge, in his capacity as president of the Ohio Road Commission, appointed in 1893, found the cost of moving freight per ton per mile to vary in the various counties between 10 and 50 cents, the average rate for the state being 25 cents.[2] According to the reports from 510 farmers in the state of Wisconsin, the cost of hauling a ton of wheat one mile would have averaged in this state only about 15 cents;[3] while the Geological Survey of Maryland found the average haul to be in that state 26 cents per mile.[4] Crowell, in his report to the Industrial Commission, again agrees with the results of Roy Stone when he says: "The average cost per ton for hauling over the common country roads is 25 cents per ton per mile.[5]

As to the average total cost per ton for the whole length of haul, Roy Stone gives for the eastern states, $1.89; northern states, $1.86; middle southern states, $2.72; cotton states, $3.05; prairie states, $1.94; Pacific coast and mountain states, $5.12; and the whole United States, $3.02[6] (9 cents per bushel). According to the reports from the same 510 farmers of the state of Wisconsin, the cost of hauling wheat averaged 2.8 cents per bushel, which would be equal to only 93⅓ cents per ton,[7] while

[1] Office of Road Inquiry, *Circular No. 19*.

[2] *Report of the Ohio Road Commission*, *loc. cit.* (*cf.* also testimony of Martin Dodge before the Industrial Commission, Vol. X, pp. 690–716, and *idem.*, "The Good-Roads Movement," in *American Monthly Review of Reviews*, January, 1902, pp. 66–72).

[3] *Cf. Eighth Biennial Report of the Bureau of Labor and Industrial Statistics, State of Wisconsin*, 1897–8, p. 169.

[4] *Maryland Geological Survey*, Vol. III, p. 211.

[5] *Industrial Commission*, Vol. VI, p. 446.

[6] Office of Road Inquiry, *Circular No. 19*.

[7] *Wisconsin Labor Bureau*, *loc. cit.*, p. 169. In a similar way Michael P. Moran, president of the National Grain Growers' Co-operative Association, gave to the Industrial Commission (Vol. X, p. 707) 3 cents as the average cost for 11 years of hauling a bushel of wheat to market from 3 to 7 miles in Bigstone county, Minn.; this makes exactly one dollar per ton.

the Geological Survey of Maryland estimates the cost of the haul in its state to be $1.74[1] (5¼ cents per bushel). As a result of a special investigation made for West Virginia, Crowell shows that the cost of moving farm products to shipping points varies in fifty-four counties between $1 (Brooke, Jefferson, Mason, Ohio, and Wood) and $10 (Pocahontas). He comes to the conclusion that the average cost of hauling a ton to the railroad station in West Virginia is $3.40 (10⅕ cents per bushel), while he considers $3 (9 cents per bushel) as the average cost to the American farmer in getting his produce to market.[2]

While the compilation of these various estimates for both countries perhaps serves its purpose of throwing some light upon the question of the cost of transportation from the farms to the nearest shipping point, the figures by no means allow of final conclusions. The reasons for this are obvious. First, the number of actual observations upon which all the figures are based is not large enough to prove something for the country as a whole; second, they do not all refer to wheat, but some of them to loads of any kind of freight; third, the cost of hauling seems to include in some cases that for loading and unloading, and in others not; and, fourth, the costs themselves are estimated according to different methods. Yet the differences found between the estimates for both countries are so large that there is hardly any doubt that the cost of hauling the wheat from the farm to the nearest railway station is considerably higher in the United States than in Argentina.

After having reached the local railway station in Argentina, the wheat to be exported is generally carried directly by rail to the shipping port. While this is true in the United States for the wheat of the Pacific coast region—which has also, in common with the Argentine wheat, a much longer ocean transportation to Europe than the North American going over Atlantic or Gulf ports—the export wheat grown east of the Rocky

[1] *Cf.* HARRY FIELDING REID, "The advantages of good roads in Maryland," *Geological Survey*, Vol. III, p. 409.

[2] *Industrial Commission*, Vol. VI, p. 447.

Name of Road.	December 31, 1899.				Rates on Wheat in 1899.[4]			
	Mileage.[1]	Number of Stations.[2]	Average number of Miles to one Station.	Maximum Distance between Stations in Miles.[3]	Minimum to which Rate Applies.[5]	Per 1000 Kilogr'm Paper Pesos.[6]		Remarks.
						Terminal Charge.	Rate per Kilometer.	
Andino (State railway)....	220.5	18	12.3	33	6000 kg	0.64	0.019	
Sud de Buenos Aires.....	2294.5	218	10.5	32	5000 kg	2.12	0.02 0.01	
Oeste de Buenos Aires.....	567.8	72	7.9	25	5000 kg	2.50	0.013	Approximately.
Buenos Aires al Rosario...	935.3	114	8.2	21	Car load	1.70	0.0255 0.017	< 100 km. > 100 km.
Central Argentino.....	845.8	104	8.1	20	Car load	1.10	0.033 0.016	Up to 150 km. > 150 km.
Buenos Aires al Pacifico...	427.1	43	9.9	21	5000 kg	1.50	0.021 0.009	Up to 200 km. > 200 km.
Villa Maria á Rufino.....	141.0	11	12.8	27	5000 kg	1.65	0.018	
Oeste Santafecino.....	130.8	17	7.7	14	6000 kg	0.50	0.05	
Grand Sud de S. Fé y Córdoba	240.3	22	10.9	16	Car load	0 50	0.03 0.02 0.015	Up to 100 km. 100 to 200 km. 200 to 300 km.
Entre Rios.....	399.5	44	9.1	17	.....	2.00	0.023	
Provincia di Santa Fé.....	814.6	87	9.4	19	Car load	2.40	0.016	
Central Córdoba Sec. Este..	130.8	13	10.1	19	6000 kg	2.00	0.02	
Córdoba y Rosario.....	179.5	24	7.5	14	Car load	1.50	0.02	

[1] Calculated from *Estadistica de los Ferrocarriles*, 1899, pp. 104 f.

[2] *Cf. ibid.*, pp. 108 f.

[3] Calculated from *ibid.*, pp. 108 f.

[4] *Cf. ibid.*, pp., 274 f.

[5] No minimum given for the Entre Rios road.

[6] The rates are given in paper pesos at a value of 227 paper pesos equal to 100 gold pesos. The average price of gold in 1899 has indeed been 224.62 (*cf. Review of the River Plate*, Saturday, January 4, 1902, p. 191); the maximum premium on gold having been 143.4 (October 26), the minimum 104.0 (January 11) (*cf. Anuario de la Estadistica*, 1899, Tomo I, pp. 393–409).

Mountains is in part brought by rail at a local rate to a primary market, and in part sent at a through rate to the ocean.

In Argentina wheat is hardly ever carried by rail over more than perhaps two hundred and fifty miles. The average distance of the local railway station from the shipping port is not higher than perhaps one hundred, at the utmost one hundred fifty miles.[1] The above table gives for each of the thirteen roads which

[1] *Cf.* Kaerger, *loc. cit.*, Vol. I, pp. 197 ff., 418, 545 f. In his report on "Transportation of Wheat in the Argentine Republic" Mr. Baker says (*loc. cit.*, p. 460 f.): ". . . . it must be borne in mind that the Argentine wheat regions are at the present time in the provinces of Buenos Aires, Santa Fé, and Entre Rios — all three bordering on water courses which are navigable for ordinary-sized ocean craft — and their distances from the principal ports of export, in no instance, probably exceed 150 miles." In his report on "Transportation of Wheat in the Province of Santa Fé" (*loc cit.*,

in 1899 carried more than thirty thousand net tons of grain, the rates exactly as they were published by the Argentine department of public works.

In order to get a fair idea of the charges made by the Argentine railways upon the wheat, it is necessary to compare their short haul rates with local wheat rates in the United States. The following table shows for a number of distances the rates charged by the thirteen Argentine railways, together with a series of thirteen rates at present in force in the United States.[1]

For distances under 100 miles the Argentine rates are decidedly lower than those of the railways selected for the United States.[2] For a distance of 10 miles, seven of the thirteen Argentine railways charge less than 4 cents per 100 pounds of wheat, which is the minimum found for the United States, while the maximum of 5.12 cents found for Argentina is exceeded in three cases in the United States. Eight Argentine railways charge for 25 miles less than the United States minimum of 5.30 cents, and eight in the latter country exceed the maximum of 5.87 cents of Argentina. Five Argentine railways charge for 50 miles less than 6.30 cents, the minimum for the United States, and the

p. 475), he further states that "an area distant about one hundred kilometers (60 miles) from Rosario . . . . would represent the bulk of the wheat production of the province of Santa Fé." William Goodwin, in his pamphlet on *Wheat Growing in Argentina* (Liverpool, 1895), says (p. 46) that "the average distance from station to seaboard is about one hundred miles." The land company of Buenos Aires, before mentioned, states as a special drawback of its lands and as the reason for the small rent which it requires for them that they are 150 miles distant from a seaport.

[1] An illustration may show the calculations which have been made in order to make the Argentime rates comparable with those copied from the North American schedules. The Argentine table gives for the Andino line: Terminal charge, per 1,000 kg, 64 centavos; rate per kilometer, per 1,000 kg, 1.9 centavos. This makes for 100 pounds for 10 miles $\frac{64 \times 96.48}{22.0462 \times 227}$ cents $+ \frac{10 \times 19 \times 96.48}{0.62137 \times 22.0462 \times 227}$ cents $= 1.82$ cents (1 paper peso $= \frac{96.48}{227}$ cents; 1,000 kg $= 2{,}204.62$ pounds, 1 km $= 0.62137$ mile). No information is given as to what distances the two rates of the Sud de Buenos Aires road apply. As the two rates of the same road for lumber apply to less than 350 and more than 350 km each, this limit of 217.5 miles has been assumed to be the one also prevailing for wheat.

[2] It may be observed that this is especially the case with the Andino road, the only line of those taken into consideration which is owned by the state.

FREIGHT-RATES IN CENTS PER HUNDRED POUNDS OF WHEAT[1] IN ARGENTINA AND IN THE
DISTANCES (MILES).[2]

Railroads.	10	25	50	75	100	125	
Andino	1.82	2.71	4.18	5.65	7.13	8.60	
Sud de Buenos Aires	4.71	5.64	7.19	8.74	10.29	11.84	
Oeste de Buenos Aires	5.22	5.83	6.84	7.84	8.85	9.86	
Buenos Aires al Rosario	4.07	5.26	7.23	8.83	10.15	11.47	
Central Argentino	3.14	4.68	7.24	9.80	12.00	13.24	
Buenos Aires al Pacifico	3.54	4.52	6.15	7.78	9.41	11.01	
Villa Maria á Rufino	3.74	4.58	5.97	7.37	8.77	10.16	[
Oeste Santafecino	2.52	4.84	8.72	12.60	16.48	20.35	[
Grand Sud de Santa Fé y Cordoba	1.89	3.29	5.62	7.55	9.10	10.64	
Entre Rios	4.57	5.64	7.42	9.21	10.99	12.78	
Provincia de Santa Fé	5.12	5.87	7.11	8.35	10.59	10.83	
Central Córdoba, Sec. Este	4.48	5.41	6.96	8.51	10.06	11.61	[
Córdoba y Rosario	3.51	4.44	5.99	7.55	9.10	10.65	
State of Illinois.[3] Class A	4.45	5.43	6.76	8.10	8.91	9.56	
State of Illinois. Class B	4.67	5.70	7.10	8.51	9.36	10.04	
State of Iowa.[4] Class A	4.70	5.30	6.30	7.30	8.10	8.80	
State of Iowa. Class B	5.40	6.10	7.25	8.40	9.32	10.12	
State of Iowa. Class C	6.11	6.89	8.19	9.49	10.53	11.44	
Burlington & Missouri River Railroad (Kan., Neb.[5])	5.00	6.00	8.50	11.00	13.00	15.00	
Missouri Pacific Railway (Kan., Mo.)[6] / Santa Fé System (Kan., Neb., Okla., I. T.).[7] Local rates	5.00	6.00	8.00	8.50	10.50	11.50	
Santa Fé System (Kan., Neb., Okla., I. T.). Interstate rates	6.50	8.00	10.50	13.00	15.50	18.00	
Chicago, Milwaukee & St. Paul Railway (Minn.).[8]	4.50	7.50	10.00	11.25	12.50	14.00	
Chicago, Milwaukee & St. Paul Railway. Interstate.[9]	5.00	6.50	9.00	11.00	13.00	15.00	
Northern Pacific Railway (Wis., Minn., N. Dak.).[10]	4.00	5.50	8.00	10.00	12.00	13.50	
Great Northern Railway (Minn., N. D., S. Dak.).[11]	4.00	5.50	8.00	10.00	12.00	13.50	

1 If not otherwise stated in the table on p. 347, the rates apply only to carloads, as which by the railways mentioned for the United States are considered 24,000 pounds, with the exception of the rates of the Burlington & Missouri River Railroad, which, according to an amendment of September 25, 1901, refer to 30,000 pounds. Bracketed figures indicate that the distances are greater than the length of the road.

2 The rates for the Argentine and the Illinois railways apply to the actual mileage given in the headings. For the other railways of the United States mentioned the rates for 10 miles apply to all distances of 10 and over 5 miles (Burlington & Missouri River Railroad, Chicago, Milwaukee & St. Paul Railway interstate, and Northern Pacific Railway to all distances of 10 and under 10; Missouri Pacific Railway and Santa Fé System local to 15 and under 15); those for 25 to all distances of 25 and over 20 (Burlington & Missouri River Railroad, Missouri Pacific Railway, and Santa Fé System local rates to 25 and over 15); those for 50 to 50 and over 45 (Missouri Pacific Railway and Santa Fé System local to 55 and over 45); those for 75 to 75 and over 70 (Missouri Pacific Railway, Santa Fé System local rates, Chicago, Milwaukee & St. Paul Railway interstate, Northern Pacific Railway and Great Northern Railway, to 75 and over 65); those for 100 to 100 and over 95 (Burlington & Missouri River Railroad to 100 and over 90; Missouri Pacific Railway and Santa Fé System local to 105 and over 95); those for 125 to 125 and over 120 (Burlington & Missouri River Railroad to 140 and over 120; Chicago, Milwaukee & St. Paul Railway, Northern Pacific Railway, and Great Northern Railway, to 130 and over 120; Missouri Pacific Railway and Santa Fé System local rates to 125 and over 115); those for 150 to 150 and over 145 (Burlington & Missouri River Railroad to 160 and over 140; Missouri Pacific Railway and Santa Fé System local to 155 and over 145; Chicago, Milwaukee & St. Paul Railway, Northern Pacific Railway, and Great Northern Railway, to 150 and over 140); those for 200 to 200 and over 195 (Burlington & Missouri River Railroad to 240 and over 180; Missouri Pacific Railway and Santa Fé System local to 200 and over 185; Chicago, Milwaukee & St. Paul Railway Minnesota to 209 and over 190; the same interstate, Northern Pacific Railway, and Great Northern Railway, to 200 and over 190); those for 250 to 250 and over 240 (Burlington & Missouri River Railroad, Missouri Pacific Railway and Santa Fé System, local, to 280 and over 240; Chicago, Milwaukee & St. Paul Railway Minnesota to 269 and over 249); those for 300 to 300 and over 290 (Burlington & Missouri River Railroad to 330 and over 280; Missouri Pacific Railway, Santa Fé System local, Chicago, Milwaukee & St. Paul Railway, Northern Pacific Railway, and Great Northern Railway, to 310 and over 290).

3 *Cf. Illinois Commissioners' Classification of Railroads to take effect January 1, 1900.* State of Illinois, Railroad and Wareho belong to Class A and twenty-five to Class B.

4 *Cf. Iowa Classification No. 12* (taking of Railroad Commissioners of the State of Io Class A, four to Class B, and eighteen to Class

5 *Cf.* Burlington & Missouri River Railro and Grain Products, carloads, taking effect F Nebraska, between stations in Kansas, betwe between stations in Nebraska and Kansas a Nebraska to Laird and Wray, Colo.

6 *Cf.* The Missouri Pacific Railway Comp 7, 1901; applying locally between stations in K west of and including Independence, Pleasant Rich Hill, Nevada, and Joplin.

7 *Cf.* Santa Fé System. Tariff No. 20A Live Stock. Local and interstate, applying w Territory, Indian Territory, and Panhandle of T

8 *Cf.* Chicago, Milwaukee & St. Paul Rai between stations in Minnesota, also on interstat Effective November 26, 1900.

9 *Cf.* Chicago, Milwaukee & St. Paul Ra company (except between points in Iowa and sota); also applying on local traffic within th Dakota. Effective December 2, 1895.

10 *Cf.* Northern Pacific Railway Company Wisconsin, Minnesota, and North Dakota east the St. Paul-Duluth Division, but will apply o Paul-Duluth Division (except Ironton, Spirit stations in Wisconsin, Minnesota, and North D

11 *Cf.* Great Northern Railway, Duluth, applying on state and interstate shipments betw North Dakota, and South Dakota. Effective Ju

IEAT[1] IN ARGENTINA AND IN THE UNITED STATES FOR VARIOUS NCES (MILES).[2]

50	75	100	125	150	200	250	300
4.18	5.65	7.13	8.60	10.08	13.02	[15.97]	[18.92]
7.19	8.74	10.29	11.84	13.39	16.50	18.59	20.14
6.84	7.84	8.85	9.86	10.87	12.89	14.90	16.92
7.23	8.83	10.15	11.47	12.79	15.43	18.06	20.70
7.24	9.80	12.00	13.24	14.48	16.96	19.45	21.93
6.15	7.78	9.41	11.01	11.71	13.10	14.50	15.89
5.97	7.37	8.77	10.16	[11.56]	[14.35]	[17.14]	[19.94]
8.72	12.60	16.48	20.35	[24.23]	[31.99]	[39.74]	[47.50]
5.62	7.55	9.10	10.64	11.80	14.13	16.45	18.78
7.42	9.21	10.99	12.78	14.56	18.13	21.69	25.26
7.11	8.35	10.59	10.83	12.07	14.55	17.04	19.52
6.96	8.51	10.06	11.61	[13.16]	[16.26]	[19.37]	[22.47]
5.99	7.55	9.10	10.65	12.20	15.30	18.40	21.51
6.76	8.10	8.91	9.56	10.24	11.58	12.47	13.40
7.10	8.51	9.36	10.04	10.75	12.16	13.09	14.07
6.30	7.30	8.10	8.80	9.50	10.80	12.15	13.53
7.25	8.40	9.32	10.12	10.92	12.42	13.97	15.56
8.19	9.49	10.53	11.44	12.35	14.04	15.80	17.59
8.50	11.00	13.00	15.00	16.00	18.00	19.00	20.00
8.00	8.50	10.50	11.50	14.00	15.25	16.00	16.50
10.50	13.00	15.50	18.00	20.50	24.50	26.00	27.25
10.00	11.25	12.50	14.00	15.00	17.50	19.00	20.00
9.00	11.00	13.00	15.00	16.00	18.50	21.00	23.00
8.00	10.00	12.00	13.50	14.50	17.00	19.50	22.00
8.00	10.00	12.00	13.50	14.50	17.00	19.50	22.00

1900. State of Illinois, Railroad and Warehouse Commission, Springfield. (Forty-one roads belong to Class A and twenty-five to Class B.)

4 *Cf. Iowa Classification No. 12* (taking effect October 1, 1901). Prepared by the Board of Railroad Commissioners of the State of Iowa, Des Moines, 1901. (Sixteen roads belong to Class A, four to Class B, and eighteen to Class C.)

5 *Cf.* Burlington & Missouri River Railroad in Nebraska. Special Distance Tariff on Grain and Grain Products, carloads, taking effect February 17, 1901; in force between stations in Nebraska, between stations in Kansas, between stations in Nebraska and stations in Kansas, between stations in Nebraska and Kansas and Fortescue or Napier, Mo.; from stations in Nebraska to Laird and Wray, Colo.

6 *Cf.* The Missouri Pacific Railway Company Distance Tariff No. 4043; effective February 7, 1901; applying locally between stations in Kansas and interstate between stations in Missouri west of and including Independence, Pleasant Hill, Holden, Harrisonville, Monteith Junction, Rich Hill, Nevada, and Joplin.

7 *Cf.* Santa Fé System. Tariff No. 20A. Distance Rates in Classes, Commodities, and Live Stock. Local and interstate, applying within and between Kansas, Nebraska, Oklahoma Territory, Indian Territory, and Panhandle of Texas Effective June 12, 1901.

8 *Cf.* Chicago, Milwaukee & St. Paul Railway. Distance Tariff applying on freight traffic between stations in Minnesota, also on interstate traffic between stations in Minnesota and Iowa. Effective November 26, 1900.

9 *Cf.* Chicago, Milwaukee & St. Paul Railway. Interstate Distance Tariff on line of this company (except between points in Iowa and Missouri or between points in Iowa and Minnesota); also applying on local traffic within the states of Michigan, North Dakota, and South Dakota. Effective December 2, 1895.

10 *Cf.* Northern Pacific Railway Company. Distance Tariff, applying between stations in Wisconsin, Minnesota, and North Dakota east of and including Beach, Mont., except locally on the St. Paul-Duluth Division, but will apply on traffic interchanged between stations on the St. Paul-Duluth Division (except Ironton, Spirit Lake, New Duluth, and Fond du Lac) and other stations in Wisconsin, Minnesota, and North Dakota. Takes effect January 25, 1902.

11 *Cf.* Great Northern Railway, Duluth, Watertown & Pacific Railway. Distance Tariff, applying on state and interstate shipments between stations on above-named lines in Minnesota, North Dakota, and South Dakota. Effective June 15, 1900.

maximum of 8.72 cents of Argentina is exceeded in three cases in the United States. While six Argentine lines charge for 75 miles less than 8 cents, and only one more than 10 cents, only one case of less than 8 cents, and six of 10 cents and more will be found in the United States.

For distances from 100 to 150 miles the rates are more similar in both countries; but while there are in Argentina only two lines charging for 100 miles more than 11 cents, only three charging more than $\frac{1}{10}$ cent per mile for 125 miles, and none charging as much for 150 miles, there are in the United States six cases with more than 11 cents for 100 miles, the same with more than $\frac{1}{10}$ cent per mile for 125 miles, and four with more than $\frac{1}{10}$ cent per mile for 150 miles.

At 200 miles the rates in both countries are much the same, while beyond this limit the rate per mile decreases faster in the United States than in Argentina.[1]

If, then, the average distance from the local station in Argentina to the shipping port is assumed to be about from 100 to 150 miles, the average freight per 100 pounds of wheat will

[1] It might be well to compare these general wheat schedules in force in the United States with some actual wheat rates applied from certain specific points to certain primary markets. In his report on "Distribution of Farm Products," Crowell gives the rates on wheat per 100 pounds in force on February 1, 1897, from a number of points to either St. Paul, Minneapolis, or Duluth, together with their distance to the primary market. (*Ind. Comm.*, Vol. VI, pp. 89–93.) The following table is compiled from the data given by Crowell, the last column containing the results of the opposite insert table.

Number of Local Stations Considered.	Distance to Primary Market in Miles.	Rates in Cents per 100 Pounds.	Rates of Thirteen Schedules in Table.
11	25	4–8	5.3–8
11	50	7–12	6.3–10.5
14	75	9–12	7.3–13
11	100	9–15	8.1–15.5
8	150	11.5–14.5	9.5–20.5
9	200	13.5–17	10.8–24.5
6	250	14.5–16	12.15–26

A comparison of the rates given by Crowell with those of the general schedules does not show any marked difference.

probably be about 11 or 12 cents, or 7 cents per bushel.[1] The railway freight rate of the Pacific coast wheat to the ocean seems to be somewhat higher. It has been estimated that the average rate from points in Oregon and Washington to the Puget Sound ports is about 10⅓ cents per bushel.[2] With regard to the freight charges from the local station to the primary market in the wheat regions of the United States east of the Rocky Mountains, it would be difficult to estimate the average charge. This rate indeed varies between a nominal amount and — exceptional cases excluded — about 15 cents per bushel, the latter being the rate from some western Kansas and Nebraska points to Chicago.[3] It may, however, be supposed that the average will not be very far from that of 7 cents found for Argentina.[4]

After having reached the primary market, the wheat to be exported is then carried either by water or by rail to the ocean. While about three-fourths of the total wheat shipped from Chicago,[5] and a still larger proportion of that shipped from Duluth, leaves the primary market by water, there is only a small part which reaches the ocean by water, most of it being loaded on rail at Buffalo or some other point. The amount of wheat shipped from St. Louis to New Orleans by way of the Mississippi

[1] KAERGER (*loc. cit.*, Vol. I, pp. 199 f., 212, 218 f. 546) gives as the average rate of transportation per 100 pounds of wheat from the local station in the provinces of Santa Fé and Buenos Ayres to the ocean 10¾ cents, from Córdoba 14½ cents. In several estimates quoted by Baker (*loc. cit.*, pp. 466, 470, 475 f.) the average rate per 100 pounds varies between 6½ and 17½ cents.

[2] *Cf. Industrial Commission*, Vol. VI, p. 102. [3] *Cf. ibid.*, pp. 130, 134.

[4] In calculating the expenses of marketing wheat at St. Louis in November, 1899, the following rates have been found per bushel of wheat: From Tipton, Mo. (163 miles), 6 cents; from Bloomfield, Iowa (258 miles), and Woodburn, Iowa (368 miles), 7.8 cents; from Indianola, Iowa (385 miles), 9.6 cents; from Crete, Neb. (486 miles), 12 cents; from Hutchison, Kan. (590 miles), 12.6 cents. Calculations made for the same time in Kansas City have shown the following results: from Falls City, Neb. (101 miles), 4.8 cents; from Wellington, Kan. (273 miles), 7.2 cents; from McPherson, Kan. (217 miles), 7.8 cents; from Bennington, Kan. (187 miles), 8.4 cents; from Perry, Okla. (338 miles), 9.9 cents; from Blue Hill, Neb. (301 miles), 10.3 cents; from Oklahoma City, Okla. (400 miles), 13.2 cents. (*Cf. ibid.*, pp. 80, 86,)

[5] *Cf. ibid.*, p. 142.

is also not very large, most of the export wheat being shipped by rail to New York.

The different average rates in cents per bushel of wheat from Chicago and St. Louis to the ocean for the last twelve years will be seen from the following table :[1]

Years.	From Chicago to New York.			From St. Louis to New York by Rail.[2]	From St. Louis to New Orleans by River.
	By all Rail.	By Lake and Rail.	By Lake and Canal.		
1890	14.31	8.5	5.85	16.58	6.58
1891	15	8.53	5.96	17.40	6.88
1892	14.23	7.55	5.61	15.97	6.50
1893	14.70	8.44	6.33	17.10	6.55
1894	12.88	7	4.44	14.84	5.89
1895	12.17	6.95	4.11	14.14	5.95
1896	12	7.32	5.38	13.60	5
1897	12.32	7.37	4.35	14.18	4.88
1898	11.55	4.96	4.42	13.35	4.50
1899	11.13	6.63	5.65	13.17	4.50
1900	9.083	5.05	4.42	11.63	4.25[4]
1901	9.023	5.57	5.14	11.60	4.25[4]

According to this table the rates have varied in the last twelve years from St. Louis to New York by rail between 11.6 and 17.4 cents, by water to New Orleans between 4.25 and 6.9 cents. According to the New York Produce Exchange, from whose reports the rates from Chicago have been taken, the average rate between the latter city and New York by all rail has varied between 9 and 15 cents, by lake and rail between 5 and 8.5 cents, by lake and canal between 4.1 and 6.3 cents.[5] The lake rate from Duluth to Buffalo being about one cent higher than that from Chicago, the freight by lake and rail and

[1] *Cf. Statistical Abstract of United States*, 1901, pp. 402 f.

[2] The rates are given per 100 pounds; here they have been expressed in bushels of 60 pounds.

[3] Local rate for export. [4] F. o. b. New Orleans.

[5] The rates given in the reports of the Board of Trade of Chicago are much the same so far as the transportation by all rail, and lake and rail are concerned, but are, up to 1898, considerably higher for the lake and canal freight (*cf. Forty-third Annual Report of the Trade and Commerce of Chicago*, p. 108). The difference is partly due to the fact that the Buffalo charges are included in the rates of the Chicago Board of Trade.

by lake and canal will be about one cent higher from Duluth to New York than from Chicago.[1] A comparison of the lake and rail rates from Chicago to Boston with those from Chicago to New York, shows the former to be 3 cents higher than the latter.[2] The difference between the all-rail freight rates on wheat from Chicago to the several Atlantic ports will be seen from the following table.[3]

During these five years the published rate was thus from Chicago to Boston 1.2 cents higher, to Philadelphia 1.2 cents lower, and to Baltimore 1.8 cents lower than to New York. As the 12-cent rate from Chicago to New York was in force during the larger part of these five years, the prevailing rate to Boston was 13.2 cents, to Philadelphia 10.8 cents, to Baltimore 10.2 cents. Since the beginning of 1899 separate rates are published for the domestic and the export trade. The rates on export

[1] The average daily rates per bushel of wheat to Buffalo were as follows:

Season.	From Chicago.	From Duluth.	Season.	From Chicago.	From Duluth.
1890	1.96	2 –5	1896	1.70	2.12
1891	2.38	1¾–9½	1897	1.56	1.75
1892	2.19	2¼–4	1898	1.53	1.8
1893	1.66	1¼–3½	1899	2.71	3.6
1894	1.27	1¼–3	1900	1.79	2.0
1895	1.97	3.5	1901	1.42	2.3

Cf. Monthly Summary of Commerce and Finance, December, 1901, pp. 2391 f.

[2] The weekly freight rates per bushel of wheat in cents from Chicago to Buffalo by lake, and thence by rail to New York and to Boston, varied as follows:

Season.	To New York.	To Boston.
1894	7	9¾–10
1895	6½–8½	8¾–11
1896	6¼–7¼	9¾–11
1897	6¾–8	9¼–10½
1898	4¼–6	9½

Cf. Thirty-seventh Annual Report of the Board of Trade of Chicago, p. 113; *idem*, *Thirty-eighth Report*, p. 113; *idem*, *Thirty-ninth Report*, p. 113; *idem*, *Fortieth Report*, p. 115; *idem*, *Forty-first Report*, p. 115.

[3] The rates are given per 100 pounds *ibid.*, *Thirty-seventh Report*, p. 116; *Thirty-eighth Report*, p. 116; *Thirty-ninth Report*, p. 116; *Fortieth Report*, p. 118, and *Forty-first Report*, p. 119. Here they are expressed in bushels of 60 pounds.

ALL-RAIL FREIGHT RATES ON WHEAT FROM CHICAGO IN CENTS PER BUSHEL IN THE YEARS 1894 TO 1898.

Time During which Rate Was in Force.	To New York.	To Boston.	To Philadelphia.	To Baltimore.
January 1, 1894, to February 27, 1894...	15	16.2	13.8	13.2
February 27, 1894, to November 12, 1894	12	13.2	10.8	10.2
November 12, 1894, to December 31, 1894	15	16.2	13.8	13.2
January 1, 1894, to June 27, 1895.....	12	13.2	10.8	10.2
June 27, 1895 to July 8, 1895.....	9	10.2	7.8	7.2
July 8, 1895, to October 15, 1897.....	12	13.2	10.8	10.2
October 15, 1897, to December 31, 1897.	13.5	14.7	12.3	11.7
January 1, 1898, to June 27, 1898.....	12	13.2	10.8	10.2
June 27, 1898, to November 10, 1898....	10.8	12.0	9.6	9
November 10, 1898, to January 2, 1899..	12	13.2	10.8	10.2

wheat in force in the years 1899, 1900, and 1901, from Chicago to the same ports, will be seen from the following table:[1]

Time During which Rate was in Force.	To New York.	To Boston.	To Philadelphia	To Baltimore.
January 2, 1899, to February 1, 1899....	12	12	10.8	10.2
February 1, 1899, to March 1, 1899.....	9.6	9.6	9	8.7
March 1, 1899, to April 18, 1899.....	11.1	11.1	10.5	10.2
April 18, 1899, to June 26, 1899	9.3	9.3	8.7	8.4
June 26, 1899, to August 1, 1899.....	7.2	7.2	6.6	6.3
August 1, 1899, to September 18, 1899..	6.6	6.6	6	5.7
September 18, 1899, to November 1, 1899	8.4	8.4	7.8	7.5
November 1, 1899, to March 12, 1900...	12	12	11.4	11.1
March 13, 1900, to April 1, 1900.....	7.8	7.8	7.2	6.9
April 2, 1900, to October 31, 1900.....	8.1	8.1	7.5	7.2
November 1, 1900, to December 31, 1900	9.6	9.6	9	8.7
Year 1901.....	8.1	8.1	7.5	7.2

During these three years, the export rates to Boston were then always exactly the same as to New York, those to Philadelphia and Baltimore (with the exception of the first month where they were still as in the preceding years 1.2 and 1.8 cents lower than to New York) were 0.6 cents and 0.9 cents lower

[1] Calculated for 1899 and 1900 from *idem*, *Forty-second Report*, p. 118; *Forty-third Report*, p. 109; for 1901 from *Final Report of the Industrial Commission*, p. 172. According to the same authority, the export wheat rates from East St. Louis to New York, and to Boston, if one bushel of wheat is counted equal to 60 pounds, would have been 9.3 cents, to Philadelphia 8.7 cents, to Baltimore 8.4 cents. It may, however, be noted that these figures derived from a 100-pound rate are lower than those given in the table on page 351.

than to New York. The published rated from Chicago to New York varied between 6.6 and 12 cents.

If conditions in the years 1895 to 1901 only are taken into consideration, the average rates per bushel of wheat would have been about the following: Chicago–New York by lake and canal, 5 cents;[1] St. Louis–New Orleans by river, 5 cents; Chicago–New York by lake and rail, 6½ cents;[2] Chicago–Boston by lake and rail (1894 to 1898), 10 cents; and by all rail Chicago–New York, 11 cents; Chicago–Boston, 12 cents; Chicago–Philadelphia, 10 cents; Chicago–Baltimore, 9½ cents; St. Louis–New York, 13 cents. This would give for the wheat leaving the primary market by water a rate of from 5 to 10 cents, and for that making the entire trip by rail, from 10 to 13 cents. If 7 cents is added to each of these items as the rate from the local station to the primary market, the totals would vary between 12 and 17 cents for part-water transportation and from 17 to 20 for all-rail transportation.

It must, however, be taken into consideration that a part of the export wheat is carried from the local station to the seaboard on a through rate. This is especially true for a large part of the wheat grown east of the Mississippi in the "Central Freight Association Territory," from the various districts of which the through rates to New York are expressed as a percentage of the Chicago–New York rate. Thus the rates from various points in Illinois vary between 100 and 125 per cent of the Chicago–New York rate, those from Eastern Michigan between 84 and 120, those from Indiana between 86 and 110 per cent.[3] The export wheat from the territory around Chicago, from Eastern Michigan and from Indiana would then be carried to the seaboard on an average at about the same rate as from Chicago itself, while the wheat exported from some western points of Illinois near

[1] All rates from Duluth by lake (1895–1901) about ½ cent higher than from Chicago.

[2] 1894 to 1898, 7 cents.

[3] *Cf.* Group Map showing percentage basis of east-bound class-rates of individual lines. In effect January 1, 1899.

the Mississippi river would be charged the Chicago–New York rate plus an additional 25 per cent. of that rate. A part of the wheat exported from west of the Mississippi would thus be carried at a local rate to the river and thence enjoy the through rate to New York.[1]

Moreover there is little doubt that the railway rates actually paid did not always correspond to the published rates upon which the above calculations have, for the most part, been based. While this fact perhaps does not play a conspicuous part, so far as the transportation from the local station to the primary market is concerned, it is an important factor in the study of the through-rates to the seaboard.[2] The published wheat export rate by all rail from Chicago to New York for instance was in 1901, 13½ cents per 100 pounds. As to this rate, a recent inquiry made by the Interstate Commerce Commission showed that there was no claim that any export wheat moved upon the "published rate. Instead, the carriers operating between Chicago and the seaboard had agreed among themselves upon a rate 2½ cents lower than the published export rate. . . . While this rate was not published, the carriers stated that its existence was generally known to the shipping public, and that all shippers were able to avail themselves of it."[3] On the other hand it must be born in mind that this statement of the Interstate Commerce Commission only refers to the traffic of Chicago and

[1] So far as the transportation of corn on local and on through rates to the East is concerned, the Industrial Commission states in general (*Final Report*, p. 178): "The difference between the through and the local rate is in normal times from 2 to 3 cents a bushel on corn in favor of a through shipment." The same authority states at a later place (p. 349), in regard to local and through rates from Missouri river points, that the rate "to Chicago on grain for export is somewhat more than 3 cents lower per 100 pounds than on grain destined to Chicago for consumption there."

[2] It may however be noted that the Interstate Commerce Commission in its last report (January 17, 1902) points to the importance of the rebates accorded on the shipments even to primary markets. It states (*Fifteenth Annual Report*, p. 15): "At the present time grain and grain products move from points of origin to the seaboard generally upon secret rates. This is entirely true of that portion which is exported, and, in the main true of domestic traffic. No serious attempt was made, or could be made to distinguish between export and domestic in applying the cut rate to Chicago."

[3] *Ibid.* pp. 12 f.

not to other primary markets and further "that the 'agreed rate' . . . . was accorded only to Chicago. Intermediate points which usually take a percentage of the Chicago basis did not enjoy the benefit of this rate."[1]

OCEAN FREIGHT RATES ON WHEAT FROM AMERICA TO EUROPE IN CENTS PER BUSHEL.

Years.	New York to Liverpool.[2]	Boston to Liverpool.[2]	Philadelphia to Liverpool.[2]	Baltimore to Liverpool.[2]	New Orleans to Liverpool.[3]	San Francisco to Cork f.o.U. K., Havre, or Antwerp.[4]	Buenos Aires[5] to	
							England.	Bremen and Hamburg.
1888	5.3	5.6	...	6.3	8.7	17.1	7.4	10.3
1889	8.0	6.5	...	9.1	11.4	21.4	9.1	9.5
1890	4.9	4.9	...	5.7	7.8	24.3	10.9	9.5
1891	6.3	5.4	...	7.0	8.9	27.3	11.1	7.8
1892	5.3	4.6	...	6.8	7.5	20.3	9.8	11.0
1893	4.8	3.8	5.8	5.7	8.2	14.8	10.3	10.5
1894	3.9	3.0	4.8	4.8	5.8	18.0	9.5	9.8
1895	5.2	3.3	4.7	4.9	6.2	17.6	9.1	9.2
1896	6.0	4.3	6.0	6.3	8.5	17.0	8.2	8.8
1897	6.2	...	...	6.4	8.0	15.5	4.5	4.5
1898	7.0	...	...	7.3	9.7	18.3	8.9	10.1
1899	4.9	...	...	5.8	7.8	16.9	...	14.3
1900	6.8	...	...	7.8	10.4	24.4	...	11.1
1901	2.5	...	...	...	5.2	25.1	...	...

Taking account of these various circumstances, it might then be said that the actual rate paid per bushel of wheat from the local station to the seaboard by part water transportation will

[1] *Ibid.* p. 12.

[2] Rates for 1888–96, calculated from *Summary of Commerce and Finance* for Jauuary, 1900, p. 1,987; rates for 1897–1901 for New York, from *Statistical Abstract of the United States*, 1901, p. 402; for 1897–1900 for Baltimore, from *Forty-third Annual Report of the Baltimore Chamber of Commerce*, pp. 145–50; *Forty-fourth Report*, pp. 136–41; *Forty-fifth Report*, pp. 138–43; *Forty-sixth Report*, pp. 136–41.

[3] Calculated from *Statistical Abstract*, 1901, p. 403.

[4] Calculated from *Thirty-fourth Annual Report of the San Francisco Produce Exchange*, p. 41, for the years ending June 30, 1888, etc. For the monthly average cargo rates in the calendar year 1901 from California, Puget Sound, and Columbia River points, see *Summary of Commerce and Finance* for December, 1901, p. 2,409.

[5] For the years 1888–90, calculated from *Anuario*, 1897, Vol. I, p. 343; for the years 1891–1900, from *ibid.*, 1900, Vol. I, pp. 408 f.

probably not have been very different from the above found rate of from 12 to 17 cents, while the average rate paid for all rail transportation will not have been, as assumed before, between 17 and 20 cents, but several cents less and perhaps not much higher than that for part-water transportation.

While, then, in recent years the average freight rate from the local station to the shipping port was about 7 cents per bushel in Argentina, it was in the Pacific coast region about 10⅓, and east of the Rocky Mountains to the Atlantic or Gulf ports about 14 or 15 cents.

The different ocean rates from Buenos Aires and from Atlantic and Pacific ports of the United States to the European markets will be seen from the opposite table.

According to this table the ocean rates per bushel of wheat varied then since 1888 from Buenos Aires to England between 4.5 and 11.1 cents; to German ports, between 4.5 and 14.3 cents; to Liverpool from New York, between 2.5 and 8 cents; from Boston, between 3 and 6.5 cents; from Philadelphia, between 4.7 and 6 cents; from Baltimore, between 4.8 and 9.1 cents; from New Orleans, between 5.2 and 11.4 cents; to Cork f. o. from San Francisco between 14.8 and 25.1 cents. The average rate from Buenos Aires was about 9½ cents; from the Atlantic ports of the United States, about 5½ cents; from New Orleans, about 8 cents; from San Francisco, about 20 cents. The rates from Buenos Aires to Europe were then about 4 cents per bushel higher than those from the Atlantic seaports of the United States; about 1½ cents higher than those from New Orleans, and about 10½ cents lower than those from San Francisco.

It has been estimated before that if 7 cents is considered as the average rate from the local station in the United States to the primary market, this would be equal to the rate from the local station in Argentina to the ocean. It is therefore interesting to compare the rates from the primary market in the United States to England with those from Buenos Aires to the United Kingdom, By adding the above found rates to the ocean rates

of the last table, the average rates per bushel of wheat would be about the following:

Chicago–New York–Liverpool, all water (1895–1901), 10½ cents;[1] St. Louis–New Orleans–Liverpool, all water (1895–1901), 12½ cents; Chicago–New York–Liverpool, by lake, rail, and ocean (1895–1901), 12 cents;[2] Chicago–Boston–Liverpool, by lake, rail, and ocean (1894–96), 13½ cents; and by rail and ocean, Chicago–New York–Liverpool (1895–1901), 16½ cents;[3] Chicago–Boston–Liverpool (1894–96), 17 cents; Chicago–Philadelphia–Liverpool (1894–96), 16 cents; Chicago–Baltimore–Liverpool (1894–1900), 16 cents;[4] St. Louis–New York–Liverpool (1895–1901), 18½ cents.

All these rates,[5] varying between 10½ and 13½ cents for part-lake transportation and between 16 and 18½ cents for all-rail, are higher than the Buenos Aires rate to England (1894–98)

[1] All rates from Duluth by lake (1895–1901) about ½ cent higher than from Chicago.

[2] 1894–96, 12 cents. [3] 1894–96, 17½ cents. [4] 1894–96, 15½ cents.

[5] The published average through freight rates to Liverpool per bushel of wheat in the last decade were as follows:

Years.	From St. Louis.		From Chicago to Seaboard by All-Rail.
	Via New Orleans by Water.	Via New York by Rail.	
1892	14	21	19.72
1893	14.71	21.72	20.46
1894	11.69	18.71	19.50
1895	12.13	18.33	19.20
1896	13.50	19.67½	20.10
1897	12.89	20.33	20.16
1898	14.24	20.32	20 61
1899	12.33	17.88	17.83
1900	14.64	18.41	17.69
1901	9.48	14.03	12.88

Cf. Statistical Abstract of the United States, 1901, p. 403. The rates from Chicago are given there in 100 pounds. Here they have been expressed in bushels of 60 pounds. The rates from Chicago are somewhat higher than those given in the above text. The reason for this is probably that the railway rates used in the text are those given by the New York Produce Exchange, while these through rates are published by the Chicago Board of Trade; and, furthermore, that the latter include the elevator charges at New York, amounting to about 1¼ cents per bushel (*cf. Forty-second Annual Report of the Chicago Board of Trade*, p. 118).

of 8 cents and the Buenos Aires rate to German ports (1894–1900) of 9½ cents. Even if ample allowance is made for the rebates accorded for the railway transportation of the wheat from the primary market to the seaboard, the freight rates on wheat from those markets to Europe over any route, and also if entirely carried by water, will have been higher than from Buenos Aires to Europe.

The freight rate on wheat from the local station to the ocean had been estimated for Argentina at 7 cents, for the Pacific coast region at 10⅓ cents, for the wheat territory east of the Rocky Mountains at about 14 or 15 cents per bushel. If to these rates the different average ocean rates are added, the total freight rate per bushel of wheat to the English market would be from Argentina about 16 cents, and in the United States for the wheat shipped over the Atlantic ports about 20 cents; over the gulf ports, about 22 or 23 cents; over the Pacific ports, about 30 cents.

The conclusions which might be drawn from the preceding study may be summarized as follows: It seems that the cost of hauling the wheat from the farm to the local station is considerably lower in Argentina than in the United States; that the cost of transporting the wheat from the local station to the shipping port is lower in Argentina than in the Pacific coast region of the United States, while it will be about as high as that of transporting the wheat grown east of the Rocky Mountains on a local rate to the primary market; that the ocean rates from Argentina are considerably lower than those from the Pacific coast region, and that therefore the cost of transportation from the local station in Argentina to Europe is considerably lower than from the local station in the Pacific coast region to Europe; that while the ocean rates from Argentina are higher than from the Atlantic and gulf seaports, the difference is by far not so large as the freight rate from the primary market to the ocean in the United States; that as a consequence hereof, even if account is taken of rebates and of the existence of through rates from local stations to the ocean, the transportation from the local station in Argen-

tina to the European market is likewise lower than from the local station east of the Rocky Mountains to Europe, and that consequently the average rate for transporting the wheat from the Argentine farm to the European market is lower than from the farm in the United States.

ROBERT RENÉ KUCZYNSKI.

WASHINGTON, D. C.